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THE EFFECT OF JOB LOSS ON SINGLES' FAMILY FORMATION

Master's Thesis
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Abstract

Previous research has shown that job loss can have long-term impact on income, employment, fertility, and divorce risk, for example. This thesis aims to contribute to the existing literature by estimating the effect of job loss on single men's and women's likelihood to find a spouse and have children. The thesis considers everyone who is not married or cohabitating with someone as a single.

To assess the effect of job loss on the probability to find a spouse and fertility, workers are assigned to treatment and control groups by their displacement status. A worker is displaced if they lose their job due to a plant closure and non-displaced otherwise. It is assumed that the displacement is independent of worker's own characteristics, in which case the observed differences between the groups are attributed to the job loss caused by a plant closure.

The results indicate that a job displacement decreases both the fertility and the likelihood that a displaced male worker finds a spouse. By the 8th displacement year, 3 fewer children are born per 100 displaced male workers. At the same time, the probability that a displaced male worker finds a spouse is decreased roughly by 1.9 percentage points.

The displaced female workers are not less likely to find a partner due to a job loss. The estimates for the effect on the fertility are of comparable size to the estimates in the male sample, but they are not statistically significant.

Keywords job loss, fertility, family formation, plant closure

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Tiivistelmä

Edeltävä tutkimus on osoittanut, että työn menettämisellä voi olla pitkäaikaisia vaikutuksia esimerkiksi ansioihin, työllisyyteen, hedelmällisyyteen ja avioeroriskiin. Tämä tutkielma pyrkii täydentämään olemassa olevaa kirjallisuutta estimoimalla työn menettämisen vaikutusta sinkkumiesten ja -naisten mahdollisuuksiin löytää puoliso ja saada lapsia. Tässä tutkielmassa sinkuksi tulkitaan kaikki henkilöt, jotka eivät ole naimisissa tai asu avoliitossa.

Jotta työn menetyksen vaikutusta puolison löytymiseen ja hedelmällisyyteen voitaisiin tutkia, työntekijät luokitellaan tutkimus- ja vertailuryhmään sen perusteella, menettivätkö he työpaikkansa toimipaikan sulkeutumisen seurauksena. Toimipaikan sulkeutumisen oletetaan olevan työntekijästä riippumatonta, jolloin havaittavat erot ryhmien välillä voidaan perustella työpaikan menettämisellä.

Tutkielman tulosten perusteella työn menetys vähentää sekä sinkkumiesten hedelmällisyyttä että heidän mahdollisuuksiaan löytää puoliso. Kahdeksantena vuonna työn menettämisen jälkeen jokaista sataa työn menettänyttä miestä kohden on syntynyt 3 lasta vähemmän. Samanaikaisesti puolison löytymisen todennäköisyys on pienentynyt noin 1,9 prosenttiyksiköllä.

Työnsä menettäneiden naisten todennäköisyys löytää puoliso ei ole pienentynyt. Estimaatit työn menetyksen vaikutuksesta naisten hedelmällisyyteen ovat samaa kokoluokkaa kuin miehillä, mutta ne eivät ole tilastollisesti merkittäviä.

Avainsanat työn menetys, hedelmällisyys, parin muodostus, toimipaikan sulkeutuminen

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1 INTRODUCTION

Declining fertility in Finland has been a topic of public discussion for a while now as the birth rate declined for 9 consecutive years until the birth rate stopped from falling in 2020 (Official Statistics of Finland (OSF), 2021). Low fertility is probably caused by several factors and an exhaustive analysis of all the possible reasons is a challenging task. However, it may be useful to reduce the scope of the analysis and take a closer look to one possible contributing factor that is job loss.

The existing literature shows that job loss can affect fertility. For example, both Del Bono, Weber and Winter-Ebmer (2012) and Huttunen and Kellokumpu (2016) find that a female job loss caused by a plant closure decreases fertility and the effect is strongest among highly educated women. The effect of job loss on male fertility is also discussed in the literature, but the results vary. For instance, Lindo (2010) finds that job loss lowers male fertility in the United States, while Huttunen and Kellokumpu (2016) do not see similar effect with Finnish data.

The above articles measure the direct impact of job loss, but some articles assess the link between job loss and fertility in a more indirect way. Autor, Dorn and Hansen (2019) find that a negative trade-shock that affects predominantly young men, causes their relative employment and earnings to drop when compared to women. Additionally, the prevalence of marriage decreases and shocks to male-intensive industries deter fertility. They relate their work to Becker's (1973) theory of marriage which is inline with their findings. The model suggests that a relative fall in male earnings should decrease the gain from marriage and thus reduce the prevalence of marriage.

This thesis attempts to contribute to the existing literature by focusing on a particular subgroup of workers. The focus lies on single workers who do not have a spouse and the main research questions concern their family formation. The particular interest is, whether a job loss caused by a plant closure affects their likelihood to find a partner and have children, and if the effect is different for men and women. In many cases the family formation is analyzed from the perspective of couples and therefore there is room for analysis that focuses solely on the singles. For example, Charles and Stephens find that spouse's lay-off increases (2004) divorce risk, Eliason (2012) shows with Swedish data that husband's displacement increases the divorce risk, and Huttunen and Kellokumpu (2016) investigate couples' reaction to a job displacement.

To assess the effect of job displacement on the singles' likelihood to find a spouse and their fertility, the thesis utilizes individual-level data from Statistics Finland (FOLK-modules).

Each person and workplace have unique identifiers enabling the matching of the employers and employees, and ultimately, the identification of job loss. The data also identifies the spouseless workers (defined here as workers without a cohabiting partner or wife/husband). This information allows the construction of single male and female samples. The empirical strategy is to compare the workers who lose their jobs due to a plant closure to those workers who do not face a plant closure and see if the groups' likelihood to find a spouse and have children are different after the displacement. The plant closures occur between the years 2006-10 and the groups are compared over an 8-year period after the plant closure to see if job displacement has longer-lasting effects.

In short, the results indicate male displacement affects both fertility and the likelihood to find a spouse. By the 8th year after the displacement, the displaced male workers have roughly 1.9 percentage points smaller probability to have a spouse than the non-displaced male workers and at the same time they will also have 3 fewer children per 100 displaced men workers. Interestingly, the job displacement does not appear to affect the likelihood with which the displaced female workers find a spouse and the observed impact on fertility is not statistically significant despite the comparable size of the estimates between the genders.

This thesis is constructed so that chapter 2 presents the data, discusses the empirical strategy in more detail, forms the male and female samples, and provides descriptive evidence about the functionality of the empirical strategy. Chapter 3 contains the main analysis by introducing the regression framework with which the displaced and non-displaced workers are compared and finally reporting the results. It also relates the findings to existing literature and discusses the limitations of the study. Chapter 4 concludes the thesis and appendix A contains results from the samples where only low- or high-educated singles are considered.

2 DATA AND EMPIRICAL STRATEGY

This section will describe the data, explain the empirical strategy, form the control and treatment groups, and provide descriptive evidence about the functionality of the empirical strategy.

2.1 Data

This work will utilize individual-level data from Statistics Finland. The FOLK modules by Statistics Finland contain a wide array of annually measured variables on the whole Finnish population. The measurements start from the year 1987 and end in 2017-2018 depending on the used data module. The specific modules included in the analysis are FOLK Employment, FOLK Family, FOLK Cohabitation, FOLK Basic data, FOLK Income and FOLK Degree/Qualification. The beauty of the data is that individuals have unique and time-consistent identifiers across the different modules which enables the compilation of an extensive data panel.

The names of the data modules already give suggestions of their contents. The Employment module matches the individuals and their employers. The ability to match the workers and their employers is vital for the coming analysis as this information will be used to identify job losses. On top the employee-employer matching, the module provides information on the workplace's industry and location, for instance. The Family and Cohabitation modules contain the main variables of interest, as they identify the individual's child count and potential cohabiting partner at the end of each year. The Basic data module provides basic characterizing information such as sex, age, region and municipality of residence, marital and occupational status while the Income module appends information about the income and the social benefits such as unemployment or parental benefits. Finally, the Degree/Qualification module gives information on the level and field of the highest completed degree.

2.2 Empirical Strategy

The goal of the thesis is to assess whether job loss will affect the fertility and family formation decisions of young adults, and if the effect is different for men and women. To answer these questions, one would like to compare two groups of people which are otherwise identical, but the other group would suddenly lose their job without their discretion. If it were discovered, say 20 years later, that one of these groups had on average significantly fewer children and they were also less likely to find a spouse, one could attribute the observed difference between the groups to the job loss as it is the only

difference between the two groups. However, such a setting is very unlikely to occur, and one should find an indirect way to create such a setting.

A very naïve and defective way to answer the question would be to find people who lose their job for whatever reason and compare their family outcomes to those who do not lose their job. This approach entails a myriad of different problems why the potential observed differences can be explained by other reasons than the job loss itself. For example, someone might want to resign from their job just to have time for family and children in which case the increase in child count was not because of job loss, but because they wanted to leave their job to form a family. More generally, there is a risk that the people who are more prone to lose their job either voluntarily or involuntarily are fundamentally different when it comes to family formation.

To combat the problem where the likelihood of one's job loss is correlated with their family formation outcomes the analysis in this thesis utilizes an approach used in other related literature. The approach is adapted most closely from the work of Huttunen and Kellokumpu (2016) and its idea is to find workplaces, referred as plants, that are closed and see if the workers displaced by the plant closure will have different family or life outcomes than the non-displaced workers in other plants. To make this approach work, it must be assumed that individual workers cannot affect their probability to face a plant closure through their own actions. If the plant closure can be viewed as a truly exogenous shock to worker's career, then the differences between the displaced and non-displaced workers can be attributed to the job loss caused by the plant closure.

2.3 Sample Restrictions

Sample formation requires some restrictions on the individual workers and plants to enable as good as possible comparability between the displaced and non-displaced workers. The restrictions are checked to apply during the year preceding a potential plant closure and these years preceding plant closures are called "base years" as they are called in (Huttunen & Kellokumpu, 2016).

Most of the sample restrictions are adopted somewhat directly from Huttunen and Kellokumpu (2016), but there are some differences. The most notable distinctions to their work concern the time horizon of the analysis and the relationship status of the individual workers. They focus on workers who have a spouse during base years 1991-93, while the analysis here considers individual workers who do not have a spouse during the base years 2005-09. The last significant difference is the age restriction. They focus on men who are 20-50 years old and women who are 20-40 years old in a base year, but here the workers,

both men and women, are restricted to be 25-35 years old to ensure better comparability between the displaced and non-displaced workers. It appeared that with a broader age range (20-40 years) the displaced workers tended to have different number of children prior to the displacement jeopardizing the assumption that the displaced and non-displaced workers are identical except for the displacement status. This problem was mitigated by the change in age range. It is also worth mentioning that the base years used in Huttunen and Kellokumpu (2016) coincide with a severe recession in Finland when more people lost their jobs making the risk for a plant closure more equal across the population. The base years 2005-09 also include a recession caused by the financial crisis 2007-2008, but the recession was nowhere near as severe that it was in the beginning of 1990's.

The of list sample restrictions on individual workers are as follows: they required not to have a spouse (defined as not being married and/or not cohabiting with anyone), they must be working with at least one year tenure to have eligibility for unemployment benefits and to have more uniform attachment to the labor market, they must not be entrepreneurs to have less discretion over the plant closure, they must not give a birth during the base year and their annual earnings must exceed the received unemployment benefits and health insurance compensations that include paternal leave benefits.

As mentioned, there are also some sample restrictions on the plants that employ the workers. Each plant must have between 10 and 1,000 workers in a given base year and the plant must operate in the private sector. Most of the plants employ less than 10 workers, but they are excluded to make the assumption of individual worker's influence on the plant closure more plausible, namely it is not difficult to conceive situations where a single worker's poor performance or aspirations affect the decision to close a plant. Finally, if the individual worker and their plant meet all the above criteria during the base years 2005-2009, the worker is included in the sample (potentially multiple times).

Now that eligible workers are identified, they are assigned to treatment and control groups based on whether their plant will be closed the after the base year. The data does not tell directly when a plant closes, but it must be inferred indirectly. The plant is considered closed if its unique identifier disappears from the data after the base year. The disappearance of the unique identifier does not yet necessarily equate to a real plant closure as the identifier may change due to administrative reasons in which case the workers do not actually lose their jobs. Huttunen and Kellokumpu (2016) solve this problem by not considering plants where more than 70% of the plant's workers share a new, different, plant identifier in the following year closed and this analysis will use the same solution. Additionally, the so-called early leavers are assigned to the treatment group. By the definition of Huttunen and Kellokumpu (2016) they are workers who leave the plant one year before its closure. It is

also required that the plant downsizes their workforce by more than 30% during the last year before the closure to count the separation as leaving early.

2.4 Descriptive Analysis

Before the main analysis, it is worthwhile to look at the descriptive characteristics of the treatment and control groups. The first method is to compare the base year group averages and assess if the two groups are similar in their basic characteristics. For example, it would be alarming and would challenge the credibility of the empirical strategy if one of the groups was on average significantly older or had more children before the treatment. The second method is to compare how the group averages (e.g., average child count or share of workers with spouse) develop over time relative to the displacement. This method attempts to demonstrate the meaningfulness of the displacement as a shock to worker's career.

Table 1 shows the group means of several variables and the *p*-value for the mean difference for both male and female samples. When the non-displaced and displaced male workers are compared, one notices that in many respects the two groups are statistically no different from each other, but in some other respects a statistically significant difference is found. The male sample appears balanced when one considers the average age, average share of workers with a spouse 4 years before the base year (by definition no one has a spouse in the base year), child count and the share of men who still live at home with their parents. The two male groups differ from each other in education level, employment, earnings, number of previous spouses and plant attributes. The displaced workers have a greater share of low educated people while also smaller share of high educated people. It also appears that the displaced men have slightly less work experience, shorter tenure, smaller earnings and are less a little less likely to be employed 4 years before the base year. They also tend to have had more previous spouses, although the share of workers with a spouse 4 years before the base year is no different. Also, the closed plants differ from the non-closed plants as they tend to employ fewer workers and are more often part of a firm that has multiple plants.

The female sample follows almost the same pattern than the men. The common differing characteristics are education level, earnings, tenure, and size of the closing plant, but there are also some dissimilarities between the samples. While the male sample displayed no difference in the average age, the displaced female workers are slightly younger than the non-displaced workers. However, the female sample appears balanced on the number of previous spouses what was not true for the male sample.

Figure 1 compares the displaced and non-displaced workers over time relative to the displacement. The group average comparison spans the time horizon from 4 years prior the

base year to 10 years after the base year. It is important to mention that the sample used in the figure is different from the sample discussed above and the sample that will be analyzed later in the thesis. The sample in the figure uses base years 1991-2003 and not the base years 2005-09 as rest of the text. This error could not be fixed anymore by the time it was noticed, but the error should not change the qualitative characteristics of the observations by much.

Table 1: Group mean comparison

	Male			Female		
	Non-displaced	Displaced	*p*-value	Non-displaced	Displaced	*p*-value
Age	29.46	29.41	0.34	29.56	29.37	0.02**
Primary Education	0.12	0.16	0.00***	0.07	0.1	0.00***
Secondary Education	0.61	0.6	0.13	0.46	0.47	0.35
Tertiary Education	0.26	0.24	0.01**	0.47	0.43	0.00***
Work Experience	8.32	8.6	0.00***	6.8	6.89	0.45
Employment (fraction) b-4	0.78	0.75	0.00***	0.76	0.74	0.02**
Real Earnings in €1,000	18.46	17.9	0.00***	15.62	14.97	0.00***
Real Earnings in €1,000 b-4	11.73	11.11	0.00***	9.07	8.82	0.15
Number of Biological Children	0.15	0.15	0.86	0.26	0.27	0.87
Number of Biological Children b-4	0.11	0.11	0.85	0.23	0.23	0.99
Childless (fraction)	0.9	0.89	0.43	0.83	0.82	0.34
Childless (fraction) b-4	0.92	0.92	0.27	0.85	0.84	0.5
Spouse (fraction) b-4	0.17	0.18	0.48	0.25	0.26	0.54
Number of Previous Spouses	0.49	0.53	0.00***	0.73	0.73	0.99
Number of Previous Spouses b-4	0.38	0.41	0.01***	0.62	0.62	0.83
Lives with Parents (fraction)	0.18	0.18	0.97	0.07	0.08	0.14
Lives with Parents (fraction) b-4	0.31	0.29	0.01**	0.15	0.16	0.15
Tenure	3.75	3.06	0.00***	3.08	2.64	0.00***
Plant Size	152.32	107.5	0.00***	138.85	110.59	0.00***
Multiplant Firm (fraction)	0.54	0.57	0.02**	0.62	0.64	0.12
Number of Plants	12.98	14.38	0.1	26.26	18.71	0.00***
N	171,940	33,94	175,334	90,851	1,541	92,392

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The first row of figure 1 shows the share of employed workers among the non-displaced and displaced workers before and after the base year, or later referred as job displacement even if the other group is not displaced. The male and female samples both show a similar pattern. The displaced workers are slightly less often employed a few years before the displacement, but the sample restrictions cause both groups to have full employment in the last two years before the displacement. As one would expect, the displaced male and female workers have greatly lower chance of being employed in the first year after the displacement. The employment level of the displaced workers will start to catch-up the employment level of the non-displaced workers already in the next year after the displacement, but the difference will not be closed entirely by the 10th displacement year. The displacement leads to a distinct and long-lasting employment level difference between the two groups in both male and female samples.

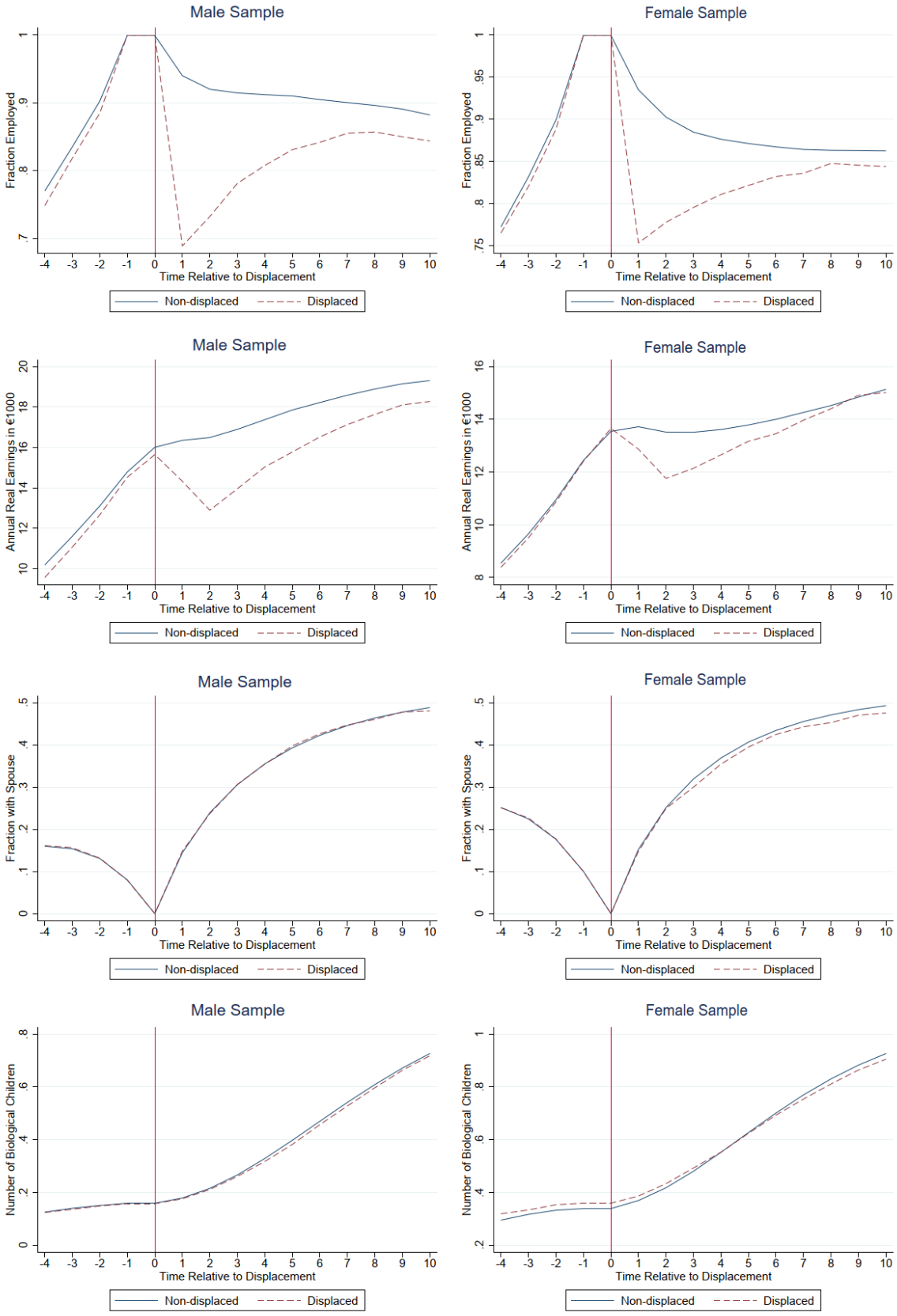

Figure 1: Group mean comparison where the displaced and non-displaced workers are compared over time relative to displacement. NB: The used sample has base years 1991-2003 and not 2005-09 as rest of the analysis!

The real annual earnings of the displaced and non-displaced workers are compared on the second row of figure 1. The displaced male workers appear to earn slightly less than their non-displaced counterparts before the displacement while the difference is not that clear in the female sample. As is expected, the real earnings of the displaced workers will drop dramatically after the displacement causing a pronounced earnings gap between the displaced and non-displaced male and female workers in the first years of displacement. The earnings difference begins to slowly diminish as did the difference in the employment level, but the displaced male workers will still earn less than the non-displaced male workers even 10 years after the displacement. The displaced female workers appear to catch-up the non-displaced female workers by the 8th year after the displacement.

The third panel of figure 1 plots the share of workers with a spouse. The displaced and non-displaced workers are alike before the displacement in both samples. The displacement does not appear to lead to a discernible difference between the two groups in the male sample, but the displaced female workers have a slightly smaller chance to have a spouse after the displacement and the difference appears to be a long-lasting one.

The fourth panel of figure 1 tracks the cumulative number of children around the time of displacement. The two groups of men do not differ from each other before the displacement, but the displaced men seem to have fewer children after the displacement. The female sample is interesting if one considers table 1. Based on the table with different base years, the two groups should not be that different within this respect before the displacement. In this sample the displaced women appear to have a little more children than the non-displaced workers before the displacement. This difference will disappear after the displacement, and the difference is even reversed by the 6th year after the displacement.

Based on this evidence, the job displacement is associated with lower employment and earnings. While the evidence is not as pronounced when it comes to the probability of finding a spouse and fertility, it is still possible that the displacement is associated with these outcomes. The following section will try to assess whether a job displacement could affect these outcomes via a regression framework where comparison happens between workers with similar characteristics such as age, education and working industry.

3 FINDINGS

This section introduces the specification of the linear regression model that is used to assess the effect of job loss on the spouseless male and female workers' chances to find a spouse, their fertility, and their future work prospects. The results will be discussed with the potential limitations of the empirical strategy and will be related to existing literature.

3.1 Research method

The analysis is done with regression analysis that is conducted separately for the male and female samples with the base years 2005-09. All the used specifications are linear with the outcome variables $Y_{i,b,t}$: (1) indicator variable for having a spouse, (2) cumulative number of children, (3) indicator variable for being childless, (4) indicator variable for being employed, (5) real earnings in €1,000 and (6) length of the work tenure after the displacement. The mathematical expression of the equation is shown below for the clarity of the coming description.

$$Y_{i,b,t} = X_{i,b}\beta + \sum_{k=-3}^{8} D_{i,b,t-k}\delta_k + I_{b,b-t}\gamma + \varepsilon_{i,b,t}$$

The subindex i stands for the individual worker, b for the base year (2005-09) and t for the observation year.

The main interest lies on the coefficients δ_k of the indicator variables $D_{i,b,t-k}$ that are assigned value 1 if the person was displaced and 0 otherwise. If the displacement is truly an exogenous shock to a worker's life, the coefficient should tell us the effect of the displacement on the outcome variable. For example, if $\delta_5 = -0.01$ in specification (1), the interpretation is that displaced workers' probability to have a spouse is 1 percentage point lower compared to non-displaced workers in the end of the 5th displacement year due to the displacement. The same logic applies to all indexes $k = -3, -2, \dots, 8$. It is noteworthy for the interpretation purposes that the index does not tell the exact time in years from the displacement due to data limitations. Since the data are observations in the end of each year, it is known that the displaced workers are displaced at some point between the indexes 0 and 1. The workers are observed to be employed at the end of the base year (index 0), but the closed plant does not appear in the data it the end of the next year (index 1). In other words, the plant could have been closed in the beginning of the year, somewhere in the middle or close to its end. To make the communication of the results easier, coefficient δ_k will be said to correspond to the effect of job displacement on the outcome after k years or in the k^{th} year, although the displacement occurred at most k years ago and on average somewhere between k and $k-1$ years ago.

The regression equation also contains a vector $X_{i,b}$ of observable control variables with their coefficients in vector β. The included control variables are observed in the base year b except for age and age squared that are observed each year t. The time-invariant categorical control variables are education level, education field, working industry, origin (identifies whether the worker is born in Finland and if at least one of their parents is Finnish), marital status (accounts for widows and divorcees), and region of residence. The time-invariant numerical control variables are plant size, length of tenure and tenure squared and work experience and its square. The term $I_{b,b-t}$ includes terms for base year indicator variables, indicator variables for time relative to base year and their interactions to account for differences between base years. $\varepsilon_{i,b,t}$ is the error term.

Finally, tables 2 and 3 show the numerical values for the coefficients of interest (δ_k) for each specification (1)–(6) and for male and female samples while figures 2 and 3 plot these coefficients with 90% coefficient intervals for a convenient way to analyze the results.

Table 2: Regression coefficients for the effect of job displacement on various outcomes in the male sample.

	Male Job Loss					
	(1)	(2)	(3)	(4)	(5)	(6)
	Spouse	Children	Childless	Employed	Earnings	Post-displacement Tenure
D_{-3}		0.00319	-0.00599**		-0.130	
		(0.00627)	(0.00246)		(0.115)	
D_{-2}		0.0032	-0.00492*		0.0331	
		(0.00665)	(0.00275)		(0.116)	
D_{-1}		0.00618	-0.00592**		0.162	
		(0.00708)	(0.00302)		(0.121)	
D_0		0.00599	-0.00579*		-0.0454	
		(0.00708)	(0.00302)		(0.124)	
D_1	-0.000833	0.0061	-0.00645*	-0.148***	-1.064***	
	(-0.00586)	(0.00743)	(0.00348)	(0.00655)	(0.159)	
D_2	-0.00818	0.00677	-0.00638	-0.100***	-2.358***	-0.168***
	(-0.00694)	(0.00814)	(0.00429)	(0.00621)	(0.169)	(0.00887)
D_3	-0.00285	0.00398	-0.0036	-0.0683***	-1.924***	-0.365***
	(0.00748)	(0.00913)	(0.00505)	(0.00607)	(0.156)	(0.0144)
D_4	-0.00435	0.00404	-0.00468	-0.0588***	-1.579***	-0.529***
	(0.00770)	(0.0103)	(0.00578)	(0.00612)	(0.162)	(0.0201)
D_5	-0.0104	-0.0119	0.00582	-0.0531***	-1.472***	-0.618***
	(0.00780)	(0.0113)	(0.00620)	(0.00611)	(0.170)	(0.0255)
D_6	-0.0193**	-0.0147	0.00649	-0.0464***	-1.331***	-0.737***
	(0.00787)	(0.0124)	(0.00665)	(0.00613)	(0.182)	(0.0308)
D_7	-0.0203**	-0.0260**	0.0108	-0.0426***	-1.204***	-0.826***
	(0.00792)	(0.0132)	(0.00694)	(0.00611)	(0.190)	(0.0359)
D_8	-0.0191**	-0.0304**	0.0136*	-0.0312***	-1.219***	-0.736***
	(0.00795)	(0.0142)	(0.00717)	(0.00564)	(0.213)	(0.0380)
N	3,218,037	3,218,037	3,218,037	3,218,037	3,218,037	3,218,037

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Regression coefficients for the effect of job displacement on various outcomes in the female sample.

	Female Job Loss					
	(1) Spouse	(2) Children	(3) Childless	(4) Employed	(5) Earnings	(6) Post-displacement Tenure
D_{-3}		0.00446	-0.0137***		0.216	
		(0.0122)	(0.00478)		(0.138)	
D_{-2}		0.00261	-0.0112**		0.0434	
		(0.0124)	(0.00498)		(0.136)	
D_{-1}		0.00206	-0.0118**		-0.0177	
		(0.0125)	(0.00518)		(0.135)	
D_0		0.00121	-0.0113**		-0.0984	
		(0.0125)	(0.00519)		(0.136)	
D_1	0.0000665	0.00309	-0.00908	-0.132***	-0.882***	
	(0.00880)	(0.0134)	(0.00588)	(0.00943)	(0.163)	
D_2	-0.0000578	0.000356	-0.00459	-0.0777***	-1.921***	-0.200***
	(0.0105)	(0.0146)	(0.00693)	(0.00876)	(0.179)	(0.0127)
D_3	0.0168	0.00166	-0.00668	-0.0569***	-1.403***	-0.329***
	(0.0113)	(0.0161)	(0.00817)	(0.00874)	(0.191)	(0.0209)
D_4	0.00796	-0.00396	-0.00529	-0.0427***	-1.089***	-0.403***
	(0.0115)	(0.0175)	(0.00911)	(0.00881)	(0.204)	(0.0288)
D_5	-0.00646	-0.0130	0.00174	-0.0174**	-0.736***	-0.485***
	(0.0116)	(0.0189)	(0.00977)	(0.00845)	(0.217)	(0.0371)
D_6	0.00408	-0.0180	0.00347	-0.0278***	-0.770***	-0.569***
	(0.0117)	(0.0202)	(0.0102)	(0.00877)	(0.231)	(0.0443)
D_7	0.00596	-0.0229	0.00105	-0.0258***	-0.554**	-0.580***
	(0.0117)	(0.0214)	(0.0106)	(0.00888)	(0.274)	(0.0513)
D_8	-0.00944	-0.0250	0.00536	-0.0144*	-0.731**	-0.519***
	(0.0117)	(0.0225)	(0.0108)	(0.00814)	(0.295)	(0.0531)
N	1,704,480	1,704,481	1,704,482	1,704,483	1,593,949	1,704,485

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

3.2 The Effect on Family Formation and Fertility

Figure 2 plots the regression coefficients δ_k for the specifications (1)-(3) where the left column corresponds to the male sample and the right column to the female sample. The first row of the figure plots the coefficients for the specification (1) where the outcome variable is an indicator variable for person having a spouse. The coefficients tell the difference in probabilities that the displaced and non-displaced workers have a spouse k years after the displacement. A negative sign implies that the displaced workers are less likely to have a spouse than the non-displaced workers and the difference in the probabilities is caused by the displacement under the exogeneity assumption. Notice that workers do not have spouses during the base year (year 0 relative to displacement) by the sample restrictions and thus the coefficients are estimated only for the positive indexes.

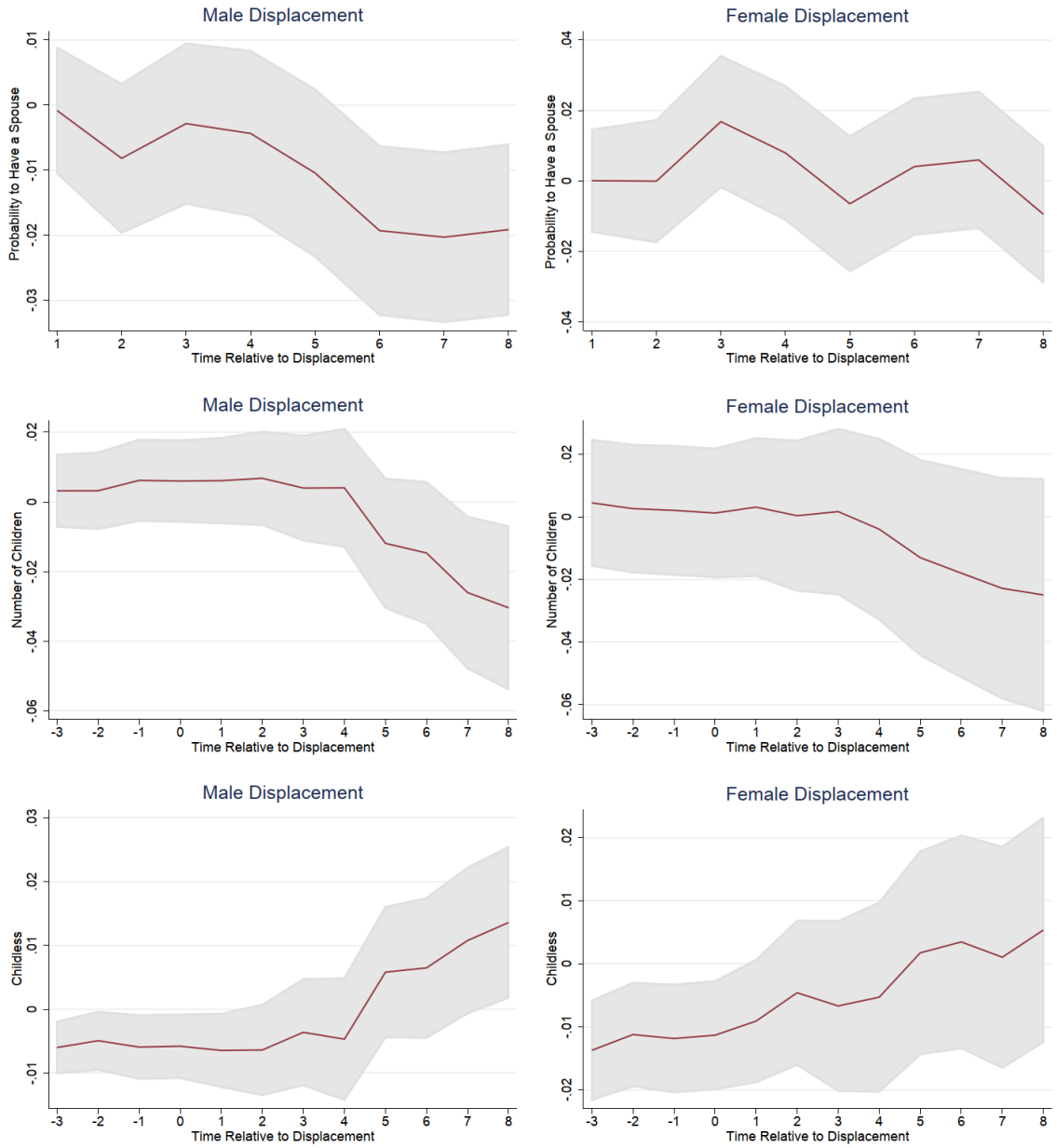

Figure 2: Regression coefficients for the effect of job displacement on probability for finding a spouse, number of children and probability for remaining childless. The left column corresponds to the male sample and the right column to the female sample.

The male sample does not display an immediate effect on the probability to have a spouse, but by the sixth year the displaced male workers are about 1.9 percentage points less likely to have a spouse than the non-displaced workers. The difference will remain approximately unchanged until the end the tracking period. The female sample does not exhibit such a clear-cut pattern. At no point is the probability difference between the displaced and non-displaced workers statistically significant and the point estimates have alternating signs

over time. The key observation is that the job loss appears to affect men's chances to find a spouse while this cannot be said about the women's chances.

The second row of figure 2 plots the coefficients δ_k for the specification (2) which has the cumulative number of children as the outcome variable. Negative sign before the coefficient implies that the displaced workers have fewer children by the k^{th} year after the displacement. In this specification it makes sense to estimate the coefficients for the negative indexes as well. Theoretically, it is possible that the childbearing is affected by the displacement even before the actual displacement if the workers can anticipate the displacement, e.g., through warnings about the poor performance of the company or lay-off threats.

The job loss does not appear to affect the fertility immediately, as it did not affect the probability to find a spouse. Both displaced men and women appear to have just as many children than their counterparts up until the 5th year after the displacement but thereafter the displaced workers appear to have fewer children. By the 8th year after the displacement the displaced men have about 3 fewer children per 100 displacements while the displaced women have 2.5 fewer children per 100 displacements. While the estimated effect has same magnitude in both samples, the estimates are statistically significant at 5% confidence level only for the male sample. This is likely explained by the difference in the sample size as the male sample is almost twice as large compared to the female sample.

The last row of figure 2 plots the coefficients for the specification (3) with an indicator variable for being childless as a dependent variable. The interpretation of the coefficient values is similar to the specification (1), i.e., the values of the coefficients tell the difference between the displaced and non-displaced workers' likelihood to remain childless in percentage points. The most glaring observation is that the displaced workers, both men and women, are more likely to be parents multiple years before the displacement. For example, the displaced men are about 0.6 percentage points, and the displaced women are as much as 1.4 percentage points, more likely to have children 3 years before the base year. Someone could argue that the displaced workers are having their children in anticipation of the displacement while they still are employed, but the difference is more likely caused by some selection bias. Selection bias is the more probable explanation because the difference is very pronounced multiple years before the displacement and the probability difference appears to be stable for the whole pre-treatment period in the male sample. Such a clear pre-treatment difference is somewhat surprising when one considers table 1 which shows that the displaced and non-displaced workers should have roughly the same share of childless workers in the base year and 4 years before the base year and that the difference in the shares is not statistically significant.

If one ignores the level difference before the displacement and considers the direction of change in the coefficient values, one finds something possibly interesting. Even if the displaced workers are more likely to be parents before the displacement, the opposite is true after the displacement. By the 8th year after the displacement, the displaced men are roughly 1.4 percentage points more likely to have no children and the pre-displacement difference has vanished in the female sample by the 8th year after the displacement. Due to the questionable pre-displacement difference, it may be inappropriate to call the observed pattern the cause of job displacement, but it leaves room for discussion. It is unclear whether the observed pattern is caused by the non-displaced workers' catch-up (do they tend to have their children later in their life) in which case the pattern is not explained by the displacement, or if the displaced workers were set to be parents more often in the absence of displacement, but the displacement led a significant portion to remain childless in which case the true effect of displacement is greater than the coefficients suggest. The pre-displacement difference appears to be relatively stable in the male sample up until the 4th year after displacement. Then, the difference first disappears and then becomes positive. In the female sample, the difference is steadily disappearing and vanishes by the end of the tracking period. The pattern in the male sample could fit the scenario where the displaced men were about to be parents more often, but the displacement prevented this from happening while the female pattern would fit the catch-up narrative better.

3.3 The Effect on Employment and Earnings

Figure 3 plots the regression coefficients δ_k for the specifications (4)-(6) and shows the results of the male and female samples on the right and left columns respectively. The first row the figure plots the results for the specification (4) where the outcome variable is an indicator variable for being employed. The coefficient indicates the probability difference for being employed that the displaced and non-displaced workers have after the displacement. A negative sign before the coefficient implies that the displaced workers have smaller probability to be employed.

Both displaced men and women are much more likely to be unemployed in the year following the displacement as the displaced men have about 15, and the displaced women about 13, percentage points smaller probability for being employed. The probability difference decreases over time in both samples, though the displaced women recover seemingly a little bit faster than the men. In the fifth year after the displacement the probability differences are 5 and 2 percentage points for the male and female samples. By the end of the tracking period, that is in the 8th year after the displacement, the probability differences for the male and female samples are about 3 and 1.5 percentage points. Job

displacement affects the employment of men and women in a similar fashion, but the initial hit is a little bit stronger for the men and this small initial gender difference appears to carry through the whole tracking period.

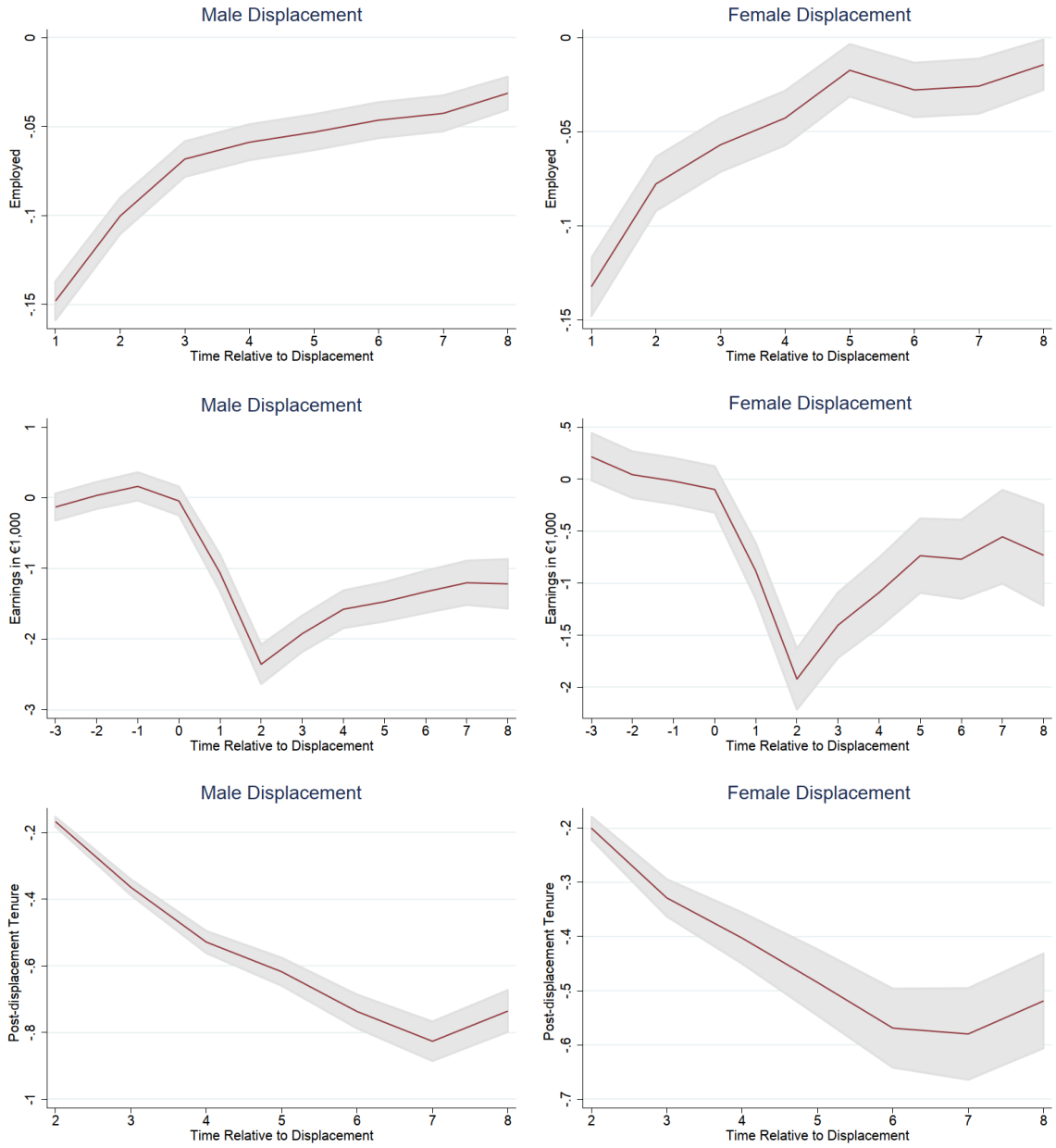

Figure 3: Regression coefficients for the effect of job displacement on probability to be employed, real earnings in €1,000 and the length of post-displacement tenure in years. The left column corresponds to the male sample and the right column to the female sample.

The second row of figure 3 shows the results from specification (5) with annual real earnings in €1,000 as the outcome variable. The interpretation of the coefficients is straightforward as the coefficient tells the absolute real earnings difference between the displaced and non-displaced workers where a negative sign indicates smaller earnings for a displaced worker.

There appears to be no clear earnings difference before the displacement in either sample, but both displaced men and women face a dramatic fall in earnings relative to the non-displaced workers. The deepest point is reached in the second year of displacement and the reason why it is not reached already in the first year lies probably on the eligibility for earnings-related unemployment benefits. In the second year after the displacement, the displaced men earn about €2,400 and the displaced women earn about €1,900 less than their non-displaced counterparts. The earnings gap will start to reduce over time in both samples, but the gaps will not be closed even in the 8th year after displacement. By then, the earnings gap is roughly €1,200 in the male sample and €700 in the female sample meaning that the gap at its largest is reduced by 48% and 62% in male and female samples respectively. These figures indicate that a job displacement affects the worker's earnings immediately and the effect is long-lasting irrespective of the gender, but the female workers' earnings will recover faster than male earnings.

The final row of figure 3 contains the regression coefficients δ_k for the specification (6) with the post-displacement tenure as the dependent variable. The post-displacement tenure is generated in a way that all workers' tenure is reset to 0 years in the first year of displacement regardless of the displacement status. Hence, the coefficient $\delta_1 = 0$ and the coefficients are estimated from the index 2 onwards. Again, the coefficients tell the absolute difference in the length of the workers tenure after the displacement and a negative sign denotes that the displaced workers have shorter tenure than the non-displaced workers.

Initially, the post-displacement tenure of the displaced workers is shorter than the non-displaced workers and is probably explained by the fact that a significantly higher portion of the displaced workers are unemployed. As the time goes by, the difference in the post-displacement tenure increases and the difference is at its largest in the 7th year after the displacement when the displaced male workers have about 0.8 years shorter tenure at their workplace while the difference for the women is about 0.6 years.

One could argue that the difference is caused by increased job instability after the displacement as the post-treatment tenure will be shorter if the workers leave their jobs more frequently. For example, the workers may see the new job as a temporary solution to unemployment or feel that their skills match the new job inadequately. While it is tempting to attribute the observed difference to job instability, it is likely that some of the difference is explained by the difference in employment level to some ambiguous degree. The general employment effects are probably the dominating component shortly after the displacement, but they may still play a significant role later. Huttunen and Kellokumpu (2016) disentangled the general employment effects from the job instability by considering only those workers who were employed by the end of the first year after the displacement. While

their approach solves one problem, it brings another as the group of workers who re-employ quickly is probably positively selected. These workers are probably the most employable workers and are more likely to find suitable jobs in which case they will likely have a longer post-displacement tenure than an average displaced worker would. In other words, the approach of Huttunen and Kellokumpu (2016) is likely to underestimate the effect job displacement on the job instability, while the approach presented here is likely to overestimate the effect, especially in the early stages after the displacement.

3.4 Discussion

The results from section 3.2 show that displaced men face difficulties in finding a spouse after as by the 6th year after the displacement their probability of having a spouse is about 1.9 percentage points lower than it is for the non-displaced men. This same difference is still found in the 8th year after the displacement indicating that the effect is long-lasting. The evidence for women is inconclusive.

The discrepancy between the sexes is interesting, especially when one considers the results of Autor et al. (2019). They found that a negative trade shock that affects predominately men causes decrease in prevalence of marriage, and they refer to a body of work by Wilson (1996; 1987; Wilson & Neckerman, 1986) that suggests that the declined employment of U.S. blue-collar (especially African-American) workers reduces the number of economically stable "marriageable" men. In Becker's (1973) terms these men decrease the gain from marriage and lead to smaller prevalence of marriage. While the results in this thesis cannot prove that the displaced men are any less desirable as partners, the results do not refute the view either.

Even if the concepts of not finding a spouse and divorce are not exactly comparable to each other, it still makes sense to associate the two to some degree. Eliason (2012) and Huttunen and Kellokumpu (2016) both find that male job displacement increases the divorce risk while the effect for female displacement is either found to be statistically insignificant in the former article or non-existent in the latter. If one considers divorce and inability to find a partner analogous to each other, then the findings of this thesis are consistent with the above articles.

The displaced men do not only face problems in finding a partner, but it was shown that their fertility is also decreased. The impact on fertility is not immediate after the displacement, but it takes several years before the displaced men begin to have fewer children than the non-displaced men. The delay is understandable when one considers that the effect on probability to find a spouse is not immediate either. The delayed response in

the reduced childbearing can be partly a consequence of not finding a partner with whom to have children. Based on the findings of Huttunen and Kellokumpu (2016) it is a little surprising that the displaced men have reduced fertility as they do not find that the fertility of couples with a displaced man is affected. Another unexpected finding is that the effect of job displacement on female fertility is statistically insignificant, albeit of comparable magnitude to estimates on male fertility, as both Huttunen and Kellokumpu (2016) and Del Bono et al. (2012) find that female fertility is decreased by the job loss, and that the effect is strongest among highly-educated women. The results in Appendix A of this thesis also suggest that the impact is stronger among highly educated women, but those estimates are not statistically significant either.

It is also found that a job displacement negatively affects the earnings and employment of both male and female workers. The effect on earnings appears to be long-lasting which is consistent with the existing literature as data from the U.S. indicates long-term earnings losses after a job displacement (Jacobson, LaLonde, & Sullivan, 1993; Stevens, 1997). The finding is also backed up by European data. Swedish register data shows that displaced workers face long-term earnings losses (Eliason & Storrie, 2006) which supported by the Finnish data (Huttunen & Kellokumpu, 2016)

Finally, it is time to discuss the limitations of the analysis. In a perfect world the effect of job displacement on family formation would be measured in randomized controlled trial, but such a trial is infeasible. A reasonable approach is to look at observational data, which is done in this thesis, but the next problem is how does one assign the subjects in the treatment and control groups randomly. In this thesis, and in the existing literature e.g., (Huttunen & Kellokumpu, 2016; Del Bono, Weber, & Winter-Ebmer, 2012; Eliason & Storrie, 2006), this done by assuming that a plant closure is an exogenous shock to worker's career in a sense that the plant closure is independent of worker's own characteristics. This seems reasonable, but one can always challenge the assumption. As was seen in table 1, the displaced and non-displaced workers are similar in many characteristics, but they differ in education level and plant characteristics, for example. It is also noted in the regression framework above that despite the additional control variables, the displaced men, and the women especially, were less often childless than the non-displaced workers before the displacement. This raises a concern whether there is some selection into the closing plants and whether it affects the credibility of the empirical strategy.

The discrepancy in the share of childless workers before the displacement could possibly be fixed by trimming the sample further by considering only the workers who do not have children in the base year and if this topic is researched further, then such a restriction is probably worth a consideration. The pre-displacement differences could also be reduced by

considering plant closures that occur during a severe recession as was done by Huttunen and Kellokumpu (2016) when they considered plant closures during the early 90's when Finland faced a very severe recession. Although the base years used in this thesis (2005-09) contain the recession caused by the financial crisis in 2007-08, the recession was not as severe as it was in the 90's. The reason why severe recession years are potentially better for this kind of analysis is that the plant closures are more likely to occur in several industries thus making the selection into closing plants more random.

Another limitation of the analysis is the time horizon over which the effects of job displacement are estimated. Because the selected base years (2005-09) are so close in history, the effects of job displacement can be estimated only for the 8 first years after the displacement due to lack of data. There is nothing wrong in estimating the effects for a shorter time horizon, but it is impossible to assess whether the estimated effects are permanent or not. For instance, it is possible that the male fertility will decrease even further if the time horizon is extended, or the male fertility could also recover over time in which case the job displacement would cause only postponed fertility. This limitation can potentially have great implications on the completed fertility, but this limitation will be solved only by time as more data becomes available.

4 CONCLUSIONS

The goal of the thesis was to study the effect of job displacement on the family formation of single workers. More specifically, the key questions were if job displacement affects single workers', both male and female, chances to find a partner and have children.

To answer these questions, workers are assigned to treatment and control groups based on their displacement status. The worker is considered displaced and put into the treatment group if they lose their job due to a plant closure. Otherwise, they are considered non-displaced and put into control group. This approach relies on the assumption that the plant closure is an exogeneous shock to worker's life and independent of the workers' characteristics. Under this exogeneity assumption, the observed differences between the displaced and non-displaced workers are attributed to the job loss caused by a plant closure.

It was found that the displaced men will have fewer children and are less likely to find a partner after the displacement. By the 8th displacement year, the displaced male workers had roughly 3 fewer children per 100 displacements when compared to the non-displaced male workers. The displaced male workers are also about 1.9 percentage points less likely to have a spouse by the 8th displacement year than their non-displaced counterparts.

The results for the single female workers differ from the results of male workers. The likelihood with which the single female workers find a partner appears to be unaffected by the job displacement. The estimates of the impact on the displaced female workers' fertility had similar magnitude (2.5 fewer children per 100 displacements by the 8th displacement year) to the estimates from the male sample, but the estimates are not statistically significant.

This thesis contributes to the existing job loss literature by focusing a particular subset of workers that are single at the time of job loss. The effect of job loss on divorce risk has been studied earlier by Eliason (2012) and Charles and Stephens (2004), for instance, and those studies will inherently focus on married couples. Also, the effect of job loss on fertility is studied earlier. Huttunen and Kellokumpu (2016) focus specifically on couples' fertility decisions and Del Bono et al. (2012) do not make a distinction whether the displaced women are single or have a spouse. On top of the specific focus on the relationship status of the workers, this thesis analyzes relatively new data when compared to other studies. For example, Huttunen and Kellokumpu (2016) consider plant closures that occurred in the years 1991-93 and Del Bono et al. (2012) include the plant closures between 1972-2002 while the plant closures considered in this thesis happened during the years 2006-2010.

The research presented here can be improved and extended in the future. One clear way to improve the quality of the results is to wait and collect more data to compare the displaced and non-displaced workers for a longer period. Additionally, it would be interesting to see if the data from other countries shows similar results.

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APPENDIX A

Table 4 (Appendix): Regression coefficients for the effect of job displacement on various outcomes in the sample with low-educated men.

	Male Job Loss, Low Education					
	(1)	(2)	(3)	(4)	(5)	(6)
	Spouse	Children	Childless	Employed	Earnings	Post-displacement Tenure
D_{-3}		0.00199	-0.00560		-0.426***	
		(0.00776)	(0.00515)		(0.121)	
D_{-2}		0.00107	-0.00484		-0.229*	
		(0.00815)	(0.00531)		(0.121)	
D_{-1}		0.00389	-0.00626		0.00617	
		(0.00867)	(0.00550)		(0.122)	
D_0		0.00362	-0.00608		-0.172	
		(0.00867)	(0.00551)		(0.120)	
D_1	-0.00423	0.00368	-0.00722	-0.168***	-1.301***	
	(0.00661)	(0.00906)	(0.00584)	(0.00790)	(0.149)	
D_2	-0.0125	0.00263	-0.00552	-0.115***	-2.668***	-0.174***
	(0.00785)	(0.00984)	(0.00639)	(0.00752)	(0.171)	(0.0104)
D_3	-0.00985	0.00118	-0.00347	-0.0810***	-2.135***	-0.392***
	(0.00846)	(0.0109)	(0.00695)	(0.00741)	(0.171)	(0.0165)
D_4	-0.00944	-0.00196	-0.00223	-0.0690***	-1.749***	-0.562***
	(0.00876)	(0.0121)	(0.00751)	(0.00745)	(0.178)	(0.0229)
D_5	-0.00915	-0.0158	0.00525	-0.0634***	-1.577***	-0.669***
	(0.00890)	(0.0132)	(0.00787)	(0.00745)	(0.186)	(0.0291)
D_6	-0.0188**	-0.0181	0.00297	-0.0571***	-1.404***	-0.796***
	(0.00901)	(0.0142)	(0.00826)	(0.00751)	(0.197)	(0.0349)
D_7	-0.0212**	-0.0268*	0.00683	-0.0511***	-1.267***	-0.904***
	(0.00907)	(0.0152)	(0.00850)	(0.00747)	(0.198)	(0.0409)
D_8	-0.0192**	-0.0297*	0.00860	-0.0361***	-1.182***	-0.815***
	(0.00911)	(0.0163)	(0.00871)	(0.00687)	(0.227)	(0.0434)
N	2,382,922	2,382,922	2,382,922	2,382,922	2,226,366	2,382,922

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5 (Appendix): Regression coefficients for the effect of job displacement on various outcomes in the sample with high-educated men.

	Male Job Loss, High Education					
	(1)	(2)	(3)	(4)	(5)	(6)
	Spouse	Children	Childless	Employed	Earnings	Post-displacement Tenure
D_{-3}		0.00383	-0.00262		0.526**	
		(0.00901)	(0.00589)		(0.248)	
D_{-2}		0.00619	-0.000208		0.687**	
		(0.0101)	(0.00594)		(0.268)	
D_{-1}		0.00937	0.000228		0.605*	
		(0.0108)	(0.00607)		(0.314)	
D_0		0.00969	0.0000226		0.403	
		(0.0108)	(0.00607)		(0.341)	
D_1	0.00721	0.00998	0.00115	-0.0839***	-0.176	
	(0.0125)	(0.0116)	(0.00673)	(0.0107)	(0.457)	
D_2	0.00443	0.0160	-0.00412	-0.0514***	-1.178***	-0.137***
	(0.0148)	(0.0134)	(0.00874)	(0.00988)	(0.446)	(0.0171)
D_3	0.0193	0.00952	-0.000177	-0.0252***	-1.017***	-0.268***
	(0.0159)	(0.0158)	(0.0106)	(0.00915)	(0.353)	(0.0292)
D_4	0.0127	0.0211	-0.0104	-0.0231**	-0.764**	-0.413***
	(0.0160)	(0.0190)	(0.0126)	(0.00941)	(0.361)	(0.0417)
D_5	-0.0124	0.000386	0.00837	-0.0161*	-0.805**	-0.445***
	(0.0162)	(0.0218)	(0.0135)	(0.00925)	(0.379)	(0.0527)
D_6	-0.0178	-0.00146	0.0167	-0.00769	-0.727*	-0.540***
	(0.0162)	(0.0249)	(0.0144)	(0.00889)	(0.412)	(0.0643)
D_7	-0.0144	-0.0188	0.0212	-0.0101	-0.607	-0.571***
	(0.0162)	(0.0266)	(0.0150)	(0.00907)	(0.466)	(0.0745)
D_8	-0.0155	-0.0261	0.0261*	-0.0103	-0.844*	-0.477***
	(0.0162)	(0.0289)	(0.0155)	(0.00857)	(0.497)	(0.0780)
N	835,115	835,115	835,115	835,115	781,249	835,115

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 (Appendix): Regression coefficients for the effect of job displacement on various outcomes in the sample with low-educated women.

	Female Job Loss, Low Education					
	(1)	(2)	(3)	(4)	(5)	(6)
	Spouse	Children	Childless	Employed	Earnings	Post-displacement Tenure
D_{-3}		-0.000385	-0.00935		-0.170	
		(0.0189)	(0.0112)		(0.169)	
D_{-2}		-0.00283	-0.00634		-0.386**	
		(0.0190)	(0.0113)		(0.169)	
D_{-1}		-0.00464	-0.00626		-0.179	
		(0.0191)	(0.0113)		(0.163)	
D_0		-0.00534	-0.00581		-0.143	
		(0.0191)	(0.0113)		(0.162)	
D_1	-0.00251	-0.000378	-0.00562	-0.182***	-1.059***	
	(0.0115)	(0.0202)	(0.0117)	(0.0138)	(0.199)	
D_2	-0.00331	-0.00279	0.00141	-0.114***	-2.510***	-0.222***
	(0.0137)	(0.0219)	(0.0122)	(0.0130)	(0.216)	(0.0169)
D_3	0.00913	-0.00618	0.00109	-0.0834***	-1.918***	-0.355***
	(0.0147)	(0.0236)	(0.0130)	(0.0129)	(0.227)	(0.0277)
D_4	0.0102	-0.0104	0.00248	-0.0534***	-1.344***	-0.427***
	(0.0152)	(0.0254)	(0.0137)	(0.0127)	(0.242)	(0.0383)
D_5	-0.00660	-0.0201	0.00355	-0.0285**	-0.936***	-0.509***
	(0.0152)	(0.0268)	(0.0142)	(0.0124)	(0.252)	(0.0491)
D_6	0.0158	-0.0119	0.00303	-0.0314**	-0.932***	-0.602***
	(0.0155)	(0.0287)	(0.0146)	(0.0125)	(0.287)	(0.0576)
D_7	0.0180	-0.00679	-0.00232	-0.0392***	-0.667*	-0.643***
	(0.0154)	(0.0301)	(0.0149)	(0.0129)	(0.375)	(0.0666)
D_8	-0.00172	-0.00642	0.000708	-0.00388	-0.597	-0.557***
	(0.0154)	(0.0315)	(0.0151)	(0.0112)	(0.387)	(0.0676)
N	906,504	906,504	906,504	906,504	847,284	906,504

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7 (Appendix): Regression coefficients for the effect of job displacement on various outcomes in the sample with high-educated women.

	Female Job Loss, High Education					
	(1)	(2)	(3)	(4)	(5)	(6)
	Spouse	Children	Childless	Employed	Earnings	Post-displacement Tenure
D_{-3}		0.00541	-0.00705		0.543**	
		(0.0128)	(0.00870)		(0.218)	
D_{-2}		0.00413	-0.00534		0.512**	
		(0.0133)	(0.00886)		(0.218)	
D_{-1}		0.00536	-0.00724		0.172	
		(0.0136)	(0.00917)		(0.222)	
D_0		0.00466	-0.00682		-0.00564	
		(0.0136)	(0.00917)		(0.226)	
D_1	0.00254	0.00237	-0.00228	-0.0664***	-0.560**	
	(0.0136)	(0.0150)	(0.00995)	(0.0116)	(0.268)	
D_2	0.00441	-0.000424	-0.00360	-0.0284***	-1.013***	-0.176***
	(0.0164)	(0.0167)	(0.0118)	(0.0104)	(0.293)	(0.0197)
D_3	0.0288	0.00778	-0.00960	-0.0194*	-0.572*	-0.292***
	(0.0175)	(0.0198)	(0.0138)	(0.0106)	(0.319)	(0.0319)
D_4	0.00747	0.00213	-0.0106	-0.0259**	-0.614*	-0.365***
	(0.0178)	(0.0224)	(0.0154)	(0.0114)	(0.347)	(0.0434)
D_5	-0.00290	-0.00350	0.00149	0.000789	-0.342	-0.442***
	(0.0179)	(0.0256)	(0.0164)	(0.0106)	(0.376)	(0.0566)
D_6	-0.00765	-0.0236	0.00479	-0.0198*	-0.433	-0.509***
	(0.0180)	(0.0271)	(0.0171)	(0.0117)	(0.375)	(0.0686)
D_7	-0.00562	-0.0385	0.00618	-0.00442	-0.277	-0.478***
	(0.0180)	(0.0293)	(0.0176)	(0.0113)	(0.391)	(0.0796)
D_8	-0.0144	-0.0418	0.0121	-0.0265**	-0.824*	-0.454***
	(0.0180)	(0.0312)	(0.0177)	(0.0116)	(0.450)	(0.0846)
N	797,976	797,976	797,976	797,976	797,980	797,976

Note: Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$